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Cosmological perturbations in the UV-protected inflation

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In natural inflation, the inflaton is a pseudo-Nambu-Goldstone boson which acquires a mass by explicit breaking of a global symmetry at scale f . In this case, for small field values, the potential is flat and stable under radiative corrections. However, slow roll conditions enforce f much larger than M_{pl} making the validity of the whole scenario questionable. In this talk, we show that a coupling of the inflaton kinetic term to the Einstein tensor allows f much smaller than M_{pl} by enhancing the gravitational friction acting on the inflaton during inflation. This new interaction, keeps the theory perturbative in the whole inflationary trajectory, preserves the tree-level shift invariance of the pseudo-Nambu-Goldstone Boson and avoids the introduction of any new degrees of freedom with respect to the standard natural inflation. We also study the nonlinear cosmological perturbations in this model. We estimate the non-Gaussianity and show that the local-type non-Gaussianity satisfies the single-field consistency relation.

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